

Claims

- 5 1. Method of oxidizing CO in a mixture of gases including oxygen and at least 65% hydrogen comprising passing said mixture of gases through a catalyst bed comprising a catalyst made by (a) preparing an aqueous iron/gold solution comprising an iron source and a gold source (b) gradually combining said iron/gold solution with an aqueous solution of an alkali metal base to maintain a pH of 7 to 9 in the combined solution as the solutions are combined, thereby producing solids in said combined solution (d) separating said solids from said combined solution (e) washing said solids, (f) drying said solids, (g) grinding said solids to a size range of 0.85mm to 4.25mm, and (h) calcining said solids.
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2. Method of claim 1 wherein said gold source comprises $\text{HAuCl}_4 \cdot 3\text{H}_2\text{O}$.
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3. Method of claim 1 wherein said iron source comprises $\text{Fe}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$.
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4. Method of claim 1 wherein step (b) is conducted at a temperature of 50°C to 90°C.

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5. Method of claim 1 wherein said pH is maintained at 7.5-8.5.
6. Method of claim 1 wherein said pH is maintained at 7.8-8.2.
- 5 7. Method of claim ^{1 wherein} said gold is present in said catalyst as 0.25% to 10% by weight of said iron oxide.
8. Method of claim 7 wherein said gold is present in said catalyst as 1% to 3% by weight of said iron oxide.
- 10 9. Method of claim 1 wherein said alkali metal base is sodium carbonate.
10. Method of claim 1 wherein said mixture of gases comprises
15 200ppm to 20,000ppm carbon monoxide and at least 10% carbon dioxide.
11. Method of claim 1 wherein said catalyst has a size range of 1mm to 1.4mm.
- 20 12. Method of oxidizing CO in a mixture of gases including oxygen at least 65% hydrogen and wherein said CO is present in an amount from 200ppm to 20,000ppm, said gas also containing methane, comprising passing said mixture of gases through a
25 catalyst bed comprising a particulate catalyst made by (a) preparing an aqueous iron/gold solution comprising an iron

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source and a gold source (b) gradually combining said iron/gold solution with an aqueous solution of an alkali metal base to maintain a pH of 7 to 9 in the combined solution as the solutions are combined, thereby producing solids in said combined solution (d) separating said solids from said combined solution (e) washing said solids, (f) drying said solids, (g) grinding said solids to a size range of 0.85mm to 4.25mm, and (h) calcining said solids, wherein the gold in said catalyst is present in an amount from 0.25% to 10% by weight of the iron in said catalyst.

13. Method of claim 12 wherein said gold is present as 1-3% of the weight of said iron.

14. Method of claim 1 wherein said catalyst is activated prior to use.

15. Method of claim 12 wherein said catalyst is activated prior to use.

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